



Table of Contents – Angular

Angular Case Study-Based Training Plan High Level
Case Study: Investment Management Dashboard
(No authentication/authorization, focused on Angular 20 features)

Topic 1: Angular Architecture & CLI Essentials

Angular architecture overview
CLI commands for project setup and scaffolding
Component basics
Hands-on: Create project structure and initial dashboard layout

Topic 2: Template Basics & Control Flow

Interpolation and event binding
Built-in control flow: @if, @for, @switch
Hands-on: Implement portfolio summary with dynamic rendering

Topic 3: Routing Fundamentals

Router basics
Lazy loading modules
Route guards
Hands-on: Add Dashboard, Portfolio, and Reports routes with lazy loading

Topic 4: Forms & API Integration

Reactive forms and advanced validation
API calls using HttpClient
Interceptors for request/response handling
Hands-on: Create “Add Investment” form and integrate mock API

Topic 5: Material Design Integration

Angular Material components: Buttons, Dialogs, Tables
Theming and customization
Hands-on: Build portfolio table with Material styling and dialogs



Topic 6: CDK Utilities

Overlay, DragDrop, Accessibility features

Hands-on: Implement drag-and-drop for portfolio reordering

Topic 7: Signals for State Management

Signals API for reactive state

Comparison with RxJS

Hands-on: Manage portfolio data using Signals

Topic 8: Standalone Components & Angular 20.x Differences

Standalone components and bootstrap process

Key differences from Angular 17 → Angular 20

Hands-on: Convert existing components to standalone

Topic 9: State Management with NgRx

Store, Actions, Reducers, Effects

Practical example for portfolio state

Hands-on: Implement NgRx for investment data flow

Topic 10: Testing & Deployment

Unit testing with Jasmine/Karma

Build optimization strategies (ESBuild)

Topic 11: Testing & Deployment

Unit testing with Jest

Training Pre-requisites

1. Technical Knowledge – For Participants
 - a. Basic HTML, CSS, and JavaScript
 - i. Understanding of DOM, events, and basic styling.
 - b. TypeScript Fundamentals
 - i. Variables, types, interfaces, classes, and generics.
 - c. ES6+ Features
 - i. Arrow functions, modules, promises, async/await.
 - d. Basic Programming Concepts
 - i. Functions, loops, conditional statements, and error handling.

1. Development Environment
 - a. Node.js & npm
 - i. Latest LTS version installed and configured.
 - b. Angular CLI
 - i. Installed globally for project setup and commands.
 - c. Code Editor
 - i. Visual Studio Code with Angular-related extensions.
 - d. Browser
 - i. Latest version of Chrome or Edge for debugging.
 - e. Access to GitHub
 - i. Ability to clone repositories and push code.
 - f. Access to GitHub Copilot
 - i. Enabled via GitHub account and integrated with VS Code.
 - g. Access to Bruno
 - i. Installed for API testing (alternative to Postman).
 - h. Access to Microsoft Teams
 - i. For communication and collaboration during training.

Out-of-Scope Topics

1. Authentication & Authorization
 - a. Login, registration, JWT handling, OAuth, role-based access control.
2. Backend Development
 - a. Express APIs, database integration, server-side rendering.
3. Advanced RxJS
 - a. Deep dive into operators, complex reactive patterns beyond Signals comparison.
4. Performance Profiling & Advanced Optimization
 - a. Angular performance tuning beyond ESBuild basics.
 - b. Lighthouse audits, advanced caching strategies.
5. Internationalization (i18n)
 - a. Multi-language support, localization strategies.
6. Accessibility Beyond CDK Basics
 - a. Full WCAG compliance, screen reader testing.
7. Progressive Web Apps (PWA)
 - a. Service workers, offline support, push notifications.
8. SSR & SSG
 - a. Angular Universal, prerendering techniques.
9. Micro-Frontend Architecture
 - a. Module federation, integration with other frameworks.
10. Advanced Testing
 - a. End-to-end testing with Cypress or Playwright.
 - b. Performance/load testing.
11. Deployment to Cloud Platforms
 - a. Detailed steps for AWS, Azure, GCP deployments.
 - b. CI/CD pipelines.
12. Third-Party Libraries Beyond Angular Material/CDK
 - a. Charts (e.g., Chart.js, D3), advanced UI libraries.
13. Monorepo & Nx Workspace
 - a. Advanced workspace management.
14. Version Migration for Older Angular Versions
 - a. Anything prior to Angular 17 → 20 differences.
15. Security Hardening
 - a. XSS prevention, CSRF protection, advanced security measures.